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NORTON, JENNIFER L

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

Office Action Summary	Application No.	Applicant(s)
	10/766,003	MOSS, ANDREW J.
	Examiner	Art Unit	
	Jennifer L. Norton	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>02 May 2007</u>.

2a)☒ This action is **FINAL**.　　2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-4,6-10 and 13-18</u> is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-4, 6-10 and 13-18</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>29 January 2004 and 09 January 2007</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☒ All　b)☐ Some * c)☐ None of:

　　　1.☒ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   The following is a **Final Office Action** in response to the Amendment After

Non-Final filed on 02 May 2007. Claims 1 and 7 have been amended. Claim 12 has

been cancelled. Claims 5 and 11 have been previously cancelled. Claims 1-4, 6-10 and

13-18 are pending in this application.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented
> and the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1-3, 6-9 and 13-16 are rejected under 35 U.S.C. 103(a) as being

unpatentable over UK Patent Application Publication No. 2,229,556 (hereinafter

Carpenter) in view of U.S. Patent No. 6,389,816 (hereinafter McCarty) in further view of

U.S. Patent 4,243,922 (hereinafter Sobotta).

4.   As per claim 1, Carpenter teaches a control system for supplying a control signal

to a controlled apparatus, the system comprising:

an error generator (Fig. 3, element 322) that produces an error signal from a

feedback value relating to a measured first operating parameter (Fig. 3, element 324)

of a controlled apparatus (abstract, lines 1-5, pg. 7, lines 16-18, pg. 10, lines 20-28 and

Fig. 3, element 346); and a required value (Fig. 3, element 320) relating to a desired

first operating parameter value of the controlled apparatus (pg. 7, lines 18-23);

a controller (abstract, lines 1-5, pg. 3, lines 12-16, pg. 7, lines 31-34, pg. 8, lines

1-6, pg. 17, lines 20-26 and Fig. 3, element 344) that receives the error signal and a

gain signal and generates a control signal based on the values thereof (col. 15, lines 1-

15);

a gain selector (pg. 7, lines 7-10 and 23-26, pg. 9, lines 20-24 and Fig. 3,

element 330);

a disturbance compensator (Fig. 3, element 336) that receives an input value

relating to a measured second operating parameter of the controlled apparatus (pg. 8,

lines 20-23 and pg. 10, lines 9-16);

Carpenter does not expressly teach a multiplier that receives the error signal and

the compensation signal, produces a compensated error signal based on a multiplication

of the compensation signal and the error signal, and provides the compensated error

signal to the gain selector; wherein the gain selector receives the compensated error

signal and provides the gain signal to the controller based on the value of the

compensated error signal.

McCarty teaches a gain (Fig. 3, element 124) multiplies the error signal by the value of 1/K where K is initially set at a predetermined value (col. 3, lines 55-58).

McCarty does not expressly teach providing the compensated error signal to the gain selector; wherein the gain selector receives the compensated error signal and provides the gain signal to the controller based on the value of the compensated error signal.

Sobotta teaches to providing a compensated error signal to a gain selector (col. 3, lines 8-13) and provides the gain signal to the controller based on the value of the compensated error signal (col. 3, lines 4-7 and Fig. 1).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Carpenter to include a gain multiplies the error signal by the value of 1/K where K is initially set at a predetermined value to provide a self calibrating system (McCarty: col. 1, lines 56-57); and providing a compensated error signal to a gain selector and provides the gain signal to the controller based on the value of the compensated error signal to provide the advantage of optimizing the response and the period of time needed to reduce the error signal which depend on the rate of change of measured and/or command input values (Sobotta: col. 2, lines 14-21).

5.   As per claim 2, Carpenter nor Sobotta expressly teach the control signal

generated by the controller is equivalent to the error signal multiplied by the gain

signal.

        McCarty teaches a gain (Fig. 3, element 124) multiplies the error signal by the

value of 1/K where K is initially set at a predetermined value (col. 3, lines 55-58).

        Therefore, it would have been obvious to a person of ordinary skill in the art at

the time of applicant's invention to modify the teaching of Carpenter in further view of

Sobotta to include a gain multiplies the error signal by the value of 1/K where K is

initially set at a predetermined value to provide a self calibrating system (McCarty: col.

1, lines 56-57).

6.   As per claim 3, Carpenter teaches as set forth above the error signal (Fig. 3,

element 322) equals the difference between the required value (Fig. 3, element 320)

and the feedback value (pg. 7, lines 18-23 and Fig. 3, element 324).

7.   As per claim 6, Carpenter teaches as set forth above a lookup table for receiving

the input value (pg. 9, lines 20-24).

Carpenter nor Sobotta expressly teach a multiplier for receiving a compensation

value from the lookup table, and for multiplying the error signal by the compensation

value to produce the compensated error signal.

McCarty teaches a gain (Fig. 3, element 124) multiplies the error signal by the

value of 1/K where K is initially set at a predetermined value (col. 3, lines 55-58).

Therefore, it would have been obvious to a person of ordinary skill in the art at

the time of applicant's invention to modify the teaching of Carpenter in further view of

Sobotta to include a gain multiplies the error signal by the value of 1/K where K is

initially set at a predetermined value to provide a self calibrating system (McCarty: col.

1, lines 56-57).

8.   As per claim 7, Carpenter teaches a method for controlling a controlled

apparatus having a measured first operating parameter, the method comprising:

generating an error signal (Fig. 3, element 322) from a feedback value relating

to a measured first operating parameter (Fig. 3, element 324) of a controlled apparatus

(abstract, lines 1-5, pg. 7, lines 16-18, pg. 10, lines 20-28 and Fig. 3, element 346) and

a required value (Fig. 3, element 320) relating to a desired value of the first operating

parameter of the controlled apparatus (pg. 7, lines 18-23);

generating a compensated error signal based on an input value, relating to a

measured second operating parameter of the controlled apparatus (pg. 8, lines 20-23

and pg. 10, lines 9-16) with the error signal (col. 10, lines 16-20).

Carpenter does not expressly teach to multiplication of an input value, selecting

a gain signal based on the compensated error signal and generating a control signal

based on the error signal and the gain signal.

McCarty teaches a gain (Fig. 3, element 124) multiplies the error signal by the

value of 1/K where K is initially set at a predetermined value (col. 3, lines 55-58).

McCarty does not expressly teach selecting a gain signal based on the

compensated error signal and generating a control signal based on the error signal and

the gain signal.

Sobotta teaches to selecting a gain signal based on a compensated signal (col. 3,

lines 8-13), and generating a control signal based on the error signal and the gain

signal (col. 3, lines 3, lines 4-7 and Fig. 1).

Therefore, it would have been obvious to a person of ordinary skill in the art at

the time of applicant's invention to modify the teaching of Carpenter to include a gain

multiplies the error signal by the value of 1/K where K is initially set at a predetermined

value to provide a self calibrating system (McCarty: col. 1, lines 56-57); and selecting a

gain signal based on a compensated signal, and generating a control signal based on

the error signal and the gain signal to provide the advantage of optimizing the response

and the period of time needed to reduce the error signal which depend on the rate of

change of measured and/or command input values (Sobotta: col. 2, lines 14-21).

9.   As per claim 8, Carpenter nor Sobotta do not expressly teach the control signal is

equivalent to the error signal multiplied by the gain signal.

McCarty teaches a gain (Fig. 3, element 124) multiplies the error signal by the

value of 1/K where K is initially set at a predetermined value (col. 3, lines 55-58).

Therefore, it would have been obvious to a person of ordinary skill in the art at

the time of applicant's invention to modify the teaching of Carpenter in further view of

Sobotta to include a gain multiplies the error signal by the value of 1/K where K is

initially set at a predetermined value to provide a self calibrating system (McCarty: col.

1, lines 56-57).

10.   As per claim 9, Carpenter teaches as set forth above the error signal (Fig. 3,

element 322) equals the difference between the required value (Fig. 3, element 320)

and the feedback value (pg. 7, lines 18-23 and Fig. 3, element 324).

11.   As per claim 13, Carpenter teaches as set forth above a gas turbine engine

controller (abstract, lines 1-5, pg. 3, lines 12-16, pg. 7, lines 31-34, pg. 8, lines 1-6, pg.

17, lines 20-26 and Fig. 3, element 344).

12.   As per claim 14, Carpenter teaches as set forth above the measured first

operating parameter is temperature (pg. 7, lines 18-23 and pg. 17, lines 27-29).

13.   As per claim 15, Carpenter teaches as set forth above a method of controlling a

gas turbine engine (abstract, lines 1-5, pg. 3, lines 12-16 and Fig. 3, element 346).

14.   As per claim 16, Carpenter teaches as set forth above the measured first

operating parameter is temperature (pg. 7, lines 18-23 and pg. 17, lines 27-29).

15.   Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Carpenter in view of McCarty in further view of Sobotta and U.K. Patent No.: 1,135,508

(referred to as hereinafter IBM (International Business Machines))

16.   As per claim 4, Carpenter, McCarty nor Sobotta expressly teach a filter means

that filters the error signal and supplies a filtered error signal to the disturbance

compensator gain in place of the error signal.

        IBM teaches to a connection between a high pass filter (Fig. 1, element 23)

and the output of the summing device (Fig. 1, element 9), and the high pass filter

output to the amplifier to produce a gain (pg. 4, lines 9-12).

        Therefore, it would have been obvious to a person of ordinary skill in the art at

the time of applicant's invention to modify the teaching of Carpenter in view of McCarty

in further view of Sobotta to include a connection between a high pass filter and the

output of the summing device, and the high pass filter output to the amplifier to

produce a gain for the purpose of modifying the abrupt nature of change in the position

of a set point to allow the system to respond to the set point change more gradually

(IBM: pg. 2, lines 12-20).

17.   As per claim 10, Carpenter, McCarty nor Sobotta expressly teach the error signal

is filtered and a filtered error signal is used in place of the error signal to generate the

compensated error signal.

        IBM teaches to a connection between a high pass filter (Fig. 1, element 23)

and the output of the summing device (Fig. 1, element 9), and the high pass filter

output to the amplifier to produce a gain (pg. 4, lines 9-12).

Therefore, it would have been obvious to a person of ordinary skill in the art at

the time of applicant's invention to modify the teaching of Carpenter in view of McCarty

in further view of Sobotta to include a connection between a high pass filter and the

output of the summing device, and the high pass filter output to the amplifier to

produce a gain for the purpose of modifying the abrupt nature of change in the position

of a set point to allow the system to respond to the set point change more gradually

(IBM: pg. 2, lines 12-20).

18.   Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Carpenter in view of McCarty in further view of Sobotta and U.S. Patent No.

6,955,039 (hereinafter Nomura).

19.   As per claim 17, Carpenter, McCarty nor Sobotta expressly teach the measured

second operating parameter is acceleration.

Nomura teaches to an acceleration measuring section (Fig. 1, element 10) of a

gas turbine (Fig. 1, element 2) to measure acceleration of the combustors of the gas

turbine (col. 9, lines 15-21).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Carpenter in view of McCarty in further view of Sobotta to include an acceleration measuring section of a gas turbine to measure acceleration of the combustors of the gas turbine to stop combustion oscillations (Nomura: col. 9, lines 22-25) to improve reliability of the gas turbine and prolong service life, thus reduced maintenance cost (Nomura: col. 2, lines 16-20), as well as improve operation control efficiency (Nomura: col. 2, lines 26-29).

20.   As per claim 18, Carpenter, McCarty nor Sobotta expressly teach the measured second operating parameter is acceleration.

Nomura teaches to an acceleration measuring section (Fig. 1, element 10) of a gas turbine (Fig. 1, element 2) to measure acceleration of the combustors of the gas turbine (col. 9, lines 15-21).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Carpenter in view of McCarty in further view of Sobotta to include an acceleration measuring section of a gas turbine to measure acceleration of the combustors of the gas turbine to stop combustion oscillations (Nomura: col. 9, lines 22-25) to improve reliability of the gas turbine and

prolong service life, thus reduced maintenance cost (Nomura: col. 2, lines 16-20), as

well as improve operation control efficiency (Nomura: col. 2, lines 26-29).

Response to Arguments

21.   Applicant's arguments see Remarks pgs. 5-8, filed 02 May 2007 with respect to

claims 1-4, 6-10 and 13-18 under 35 U.S.C. 103(a) have been considered but are moot

in view of the new ground(s) of rejection.

22.   The Examiner emphasizes that all anticipated components and limitations

of pending claims are present in the prior art as cited above. In addition, the Examiner

notes the Applicant's paraphrased limitation "the compensated error signal is a function

of the multiplication of the error signal and the compensation signal" was newly

presented in the Amendment After Non-Final received on 02 May 2007 by the Office,

and has been addressed as set forth in the Office Action above.

23.   Applicant argues that the prior art fails to teach, "a disturbance compensator that

receives an input value relating to a measured second operating parameter..., receiving

the error signal, producing a compensated error signal based on the input valve and the

error signal, and providing the compensated error signal, as recited in claim 1,"; is moot

in view of the Applicant's amendment to the claims as set forth in the Amendment

After-Final filed on 02 May 2007.

However, with reference to claims 1 and 7 the Examiner will address the limitations "a disturbance compensator that receives an input value relating to a measured second operating parameter... as recited in claim 1, or generating a compensated error signal based on an input value relating to a measured second operating parameter of the controlled apparatus and the error signal, as recited in claim 7."; since these limitations remain related the to the amended claims as set forth above.

As per claim 1 and 7, Carpenter discloses (pg. 8, lines 20-23) "The means for receiving a target variable exhaust nozzle position 336 also typically receives numerous inputs such as fan inlet temperature and ambient pressure."

(pg. 10, lines 9-20) "The means for receiving a target variable exhaust nozzle position 336 provides a signal representative of a target nozzle position representative of a base or standard engine, such as a new engine. This variable exhaust target signal is then coupled to the output of the first set of dynamics through the first means for combining signals 334. The output of the first means for combining signals 334 provides an exhaust nozzle control signal based on the target position which is adjusted by the difference between the actual and the target temperature."

In summary, Carpenter teaches a disturbance compensator (Fig. 3, element 336) that receives an input value relating to a measured second operating parameter (i.e. fan inlet temperature and ambient pressure)... as recited in claim 1, or generating a compensated error signal based on an input value relating to a measured second operating parameter of the controlled apparatus and the error signal (i.e. the first means for combining signals 334 provides an exhaust nozzle control signal based on the target position which is adjusted by the difference between the actual and the target temperature), as recited in claim 7.

24.   In response to applicant's arguments, "Sobott(a) teaches varying the gain of each error signal based on the rate of change of the same error signal", see MPEP 2123 II. which states, "Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments."

Furthermore, the examiner recognizes the Applicant has not accounted for the combination of Carpenter and Sobotta under 35 U.S.C 103(a) for this limitation as set forth in the Non-Final Office Action, mailed on 02 February 2007, claim 1 has been recited below for convenience:

As per claim 1, Carpenter teaches a control system for supplying a control signal to a controlled apparatus, the system comprising:

an error generator (Fig. 3, element 322) that produces an error signal from a

feedback value relating to a measured first operating parameter (Fig. 3, element 324)

of a controlled apparatus (abstract, lines 1-5, pg. 7, lines 16-18, pg. 10, lines 20-28 and

Fig. 3, element 346); and a required value (Fig. 3, element 320) relating to a desired

first operating parameter value of the controlled apparatus (pg. 7, lines 18-23);

a controller (abstract, lines 1-5, pg. 3, lines 12-16, pg. 7, lines 31-34, pg. 8, lines

1-6, pg. 17, lines 20-26 and Fig. 3, element 344) that receives the error signal and a

gain signal and generates a control signal based on the values thereof (col. 15, lines 1-

15);

a gain selector (pg. 7, lines 7-10 and 23-26, pg. 9, lines 20-24 and Fig. 3,

element 330); and

a disturbance compensator (Fig. 3, element 336) that receives an input value

relating to a measured second operating parameter of the controlled apparatus (pg. 8,

lines 20-23 and pg. 10, lines 9-16), receives the error signal, produces a compensated

error signal based on the input value and the error signal (pg. 10, lines 16-20).

Carpenter does not expressly teach providing the compensated error signal to

the gain selector, wherein the gain selector receives the compensated error signal and

provides the gain signal to the controller based on the value of the compensated error

signal.

Sobotta teaches to providing a compensated error signal to a gain selector (col. 3, lines 8-13) and provides the gain signal to the controller based on the value of the compensated error signal (col. 3, lines 4-7 and Fig. 1).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Carpenter to include providing a compensated error signal to a gain selector and provides the gain signal to the controller based on the value of the compensated error signal to provide the advantage of optimizing the response and the period of time needed to reduce the error signal which depend on the rate of change of measured and/or command input values (col. 2, lines 14-21).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following references are cited to further show the state of the art with respect to a control system in which an error generated signal and gain value are used to control an apparatus:

U.S. Patent No. 7,187,148 discloses a controller for restraining vibration of a driven element driven by a servomotor.

U.S. Patent No. 7,188,019 a gas turbine control apparatus, etc. by which

combustion fluctuation can be effectively suppressed even if the combustion fluctuation

arises in a plurality of frequency bands.

Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire

later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jennifer L. Norton whose telephone number is 571-272-

3694. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on 571-272-3687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Anthony Knight
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